

## **Amendments to the Claims**

This listing of claims will replace all prior versions and listings of claims in the application.

### **Listing of Claims**

#### **Claims 1-7 (Canceled)**

**Claim 8 (Currently amended):** A digital signal transmission method, comprising a process of sending and transferring binary signals generated from binary digit signals "0" and "1" from a transmission side to a reception side,

wherein, at the transmission side, the binary signals are expressed as a sequence of pulse groups; the binary signals "0" and "1" are expressed by two pulse groups with two special pulse frequencies and with same defined number of pulses and thus with different duration times; and

sending the sequence of pulse groups to a medium; wherein, at the reception side, the sequence of pulse groups is received and divided according to the same defined number; the duration times of the pulse groups in the sequence of pulse groups are measured and the duration time differences of the pulse groups are used to express binary digits "0" and "1";

wherein a synchronous process is included before sending the sequence of pulse groups for synchronizing the data transmission and reception and correctly dividing the sequence of pulse groups into the pulse groups; and

~~The digital signal transmission method as set forth in claim 7,~~

wherein the said synchronous process is as follows: a mark number, a pre-selected multi bytes binary number, is sent from the transmission side repeatedly,

and a received number is received at the signal reception side; if the received number is not the same as with the ~~said~~ mark number, one pulse is canceled before next time in comparing the received number with the ~~said~~ mark number, until the same number is received.

**Claim 9 (Canceled)**

**Claim 10 (Currently amended):** A coding circuit for executing a coding method for binary digits comprising the step of transforming a series of binary digits generated from binary digits "0" and "1" into a sequence of pulse groups, wherein the binary digits "0" and "1" in the series of binary digits are transformed respectively into two pulse groups which have two different special defined pulse frequencies and have same defined number of pulses thereby having different duration times, and the defined number is at least two, said coding circuit comprising

a coding module used for convert the binary digits into a sequence of pulse groups in which the digits "0" and "1" are corresponding to the pulse groups consist of same said defined number of pulses and with two said special defined pulse frequencies and different duration times; the pulse groups consist of same defined number of pulses; the defined number is at least 2,

~~The coding circuit as set forth in claim 9,~~

wherein said coding module comprises ~~comprising~~[: ]

an interface[, ] for converting the transmitting digits into serial signals and sending the binary digits logical levels to a voltage level transfer circuit;

a voltage level transfer circuit[, ] for transferring the binary logical levels into two special voltage levels;

a voltage/frequency converter[,] for generating the pulses with said two special defined pulse frequencies according to an input of two said special voltage levels; and

a binary counter[,] for counting the pulses generated by the voltage/frequency converter, and as the ~~said~~ defined number of pulses is counted, it controls interface to output the next digit bit.

**Claim 11 (Canceled)**

**Claim 12 (Currently amended):** A decoding circuit for executing a decoding method for transforming a sequence of pulse groups into a series of binary digits generated from binary digits "0" and "1", the sequence of pulse groups comprising of pulse groups which have two different special defined pulse frequencies and have same defined number of pulses thereby having different duration times, said defined number being at least two, the decoding method comprising dividing the sequence of pulse groups into pulse groups according to the same defined number of pulses; measuring duration times of the pulse groups, and transforming the pulse groups into binary digits "0" or "1" according to the different duration times of the pulse groups, said decoding circuit comprising

a decoding module for dividing said sequence of pulse groups into the pulse groups according to the same defined number and for measuring the duration time of each pulse group and then converting the duration time differences into binary digits "0" or "1";

~~The decoding circuit as set forth in claim 11,~~

wherein said decoding module comprises ~~comprising~~:

a binary counter[,] for counting the pulses in the ~~said~~ sequence of pulse groups, as the ~~said~~ defined number of pulses is reached, it controls the pulse group duration time measurement unit to measure the pulse group duration time;

a pulse group duration time measurement unit[,] for measuring the duration time of the pulse groups and output “low” or “high” voltage levels according to the difference of the duration time of the pulse groups for expressing the binary digits “0” or “1”; and

an interface[,] for receiving the voltage outputs from the pulse group duration time measurement unit, and converting them as the binary logical voltage levels.

**Claim 13 (Canceled)**

**Claim 14 (Currently amended):** A digital signal transmission circuit, comprising:

a medium for signal transfer;

a coding module at a transmission side for converting binary digits as a sequence of pulse groups, the binary digits “0” and “1” are corresponding to pulse groups with two special pulse frequencies and with same defined number of pulses, the pulse groups have same defined pulse number and different duration times; the defined pulse number is at least two;

a band filter and amplifier module located at a reception side for signal band filtering and amplifying;

a synchronous module connected with the band filter and amplifier module for synchronizing the signal transmission and reception and dividing the sequence of pulse groups into said pulse groups; and

a decoding module connected with the synchronous module for dividing the sequence of the pulse groups into the pulse groups according to the same defined number and for measuring the duration time of each pulse group and then converting the duration time difference into binary digits "0" or "1";

~~The digital signal transmission circuit as set forth in claim 13,~~

wherein said coding module comprises ~~comprising~~:

a interface[,] for converting the transmission signal into serial signal and sending the serial logical voltage level to the voltage level transfer circuit;

a voltage level transfer circuit[,] for converting the serial logical voltage levels into two special voltage levels corresponding to the ~~said~~ two special frequencies;

a voltage/frequency converter[,] for generating pulses with the ~~said~~ two special frequencies according to the input two special voltage levels; and[;]

a binary counter[,] for counting the pulses output from the voltage/frequency converter, and as the ~~said~~ defined number is reached, it controls the interface to output another bit.

**Claim 15 (Canceled)**

**Claim 16 (Currently amended):** A digital signal transmission circuit, comprising:

a medium for signal transfer;

a coding module at a transmission side for converting binary digits as a sequence of pulse groups, the binary digits "0" and "1" are corresponding to pulse groups with two special pulse frequencies and with same defined number of pulses, the pulse groups have same defined pulse number and different duration times; the defined pulse number is at least two;

a band filter and amplifier module located at a reception side for signal band filtering and amplifying;

a synchronous module connected with the band filter and amplifier module for synchronizing the signal transmission and reception and dividing the sequence of pulse groups into said pulse groups; and

a decoding module connected with the synchronous module for dividing the sequence of the pulse groups into the pulse groups according to the same defined number and for measuring the duration time of each pulse group and then converting the duration time difference into binary digits "0" or "1",

~~The digital signal transmission circuit as set forth in claim 13,~~

wherein said synchronous module comprises ~~comprising~~:

a pulse canceling circuit for each time canceling one pulse; and

a comparator[,] for comparing the number output from decoding module with a ~~said~~ pre-selected mark number, if it is not the same, it controls the pulse canceling circuit to cancel one pulse from the sequence of the pulse groups, whereas if it is the same, the pulse canceling circuit will not work.

**Claim 17 (Currently amended):** A digital signal transmission circuit,  
comprising:

a medium for signal transfer;

a coding module at a transmission side, for converting binary digits as a  
sequence of pulse groups, the binary digits "0" and "1" are corresponding to pulse  
groups with two special pulse frequencies and with same defined number of pulses,  
the pulse groups have the same defined pulse number and different duration times;  
the defined pulse number is at least two;

a band filter and amplifier module located at a reception side for signal band  
filtering and amplifying;

a synchronous module connected with the band filter and amplifier module  
for synchronizing the signal transmission and reception and dividing the sequence of  
pulse groups into said pulse groups; and

a decoding module connected with the synchronous module for dividing the  
sequence of the pulse groups into the pulse groups according to the same defined  
number and for measuring the duration time of each pulse group and then  
converting the duration time difference into binary digits "0" or "1,"

~~The digital signal transmission circuit as set forth in claim 13,~~

wherein said decoding module comprises ~~comprising~~:

a binary counter[, ] for counting the pulses in the ~~said~~ sequence of  
pulse groups; ~~As~~ as the ~~said~~ defined number is reached, it controls the pulse  
group duration time measurement unit to measure the duration time of the  
pulse groups; and

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a pulse group duration time measurement unit[,] for measuring the pulse group duration time and converting the pulse group duration time differences into binary digits "0" and "1".

**Claims 18-19 (Canceled)**